



Comparing planned and real response times for fire services in Sweden

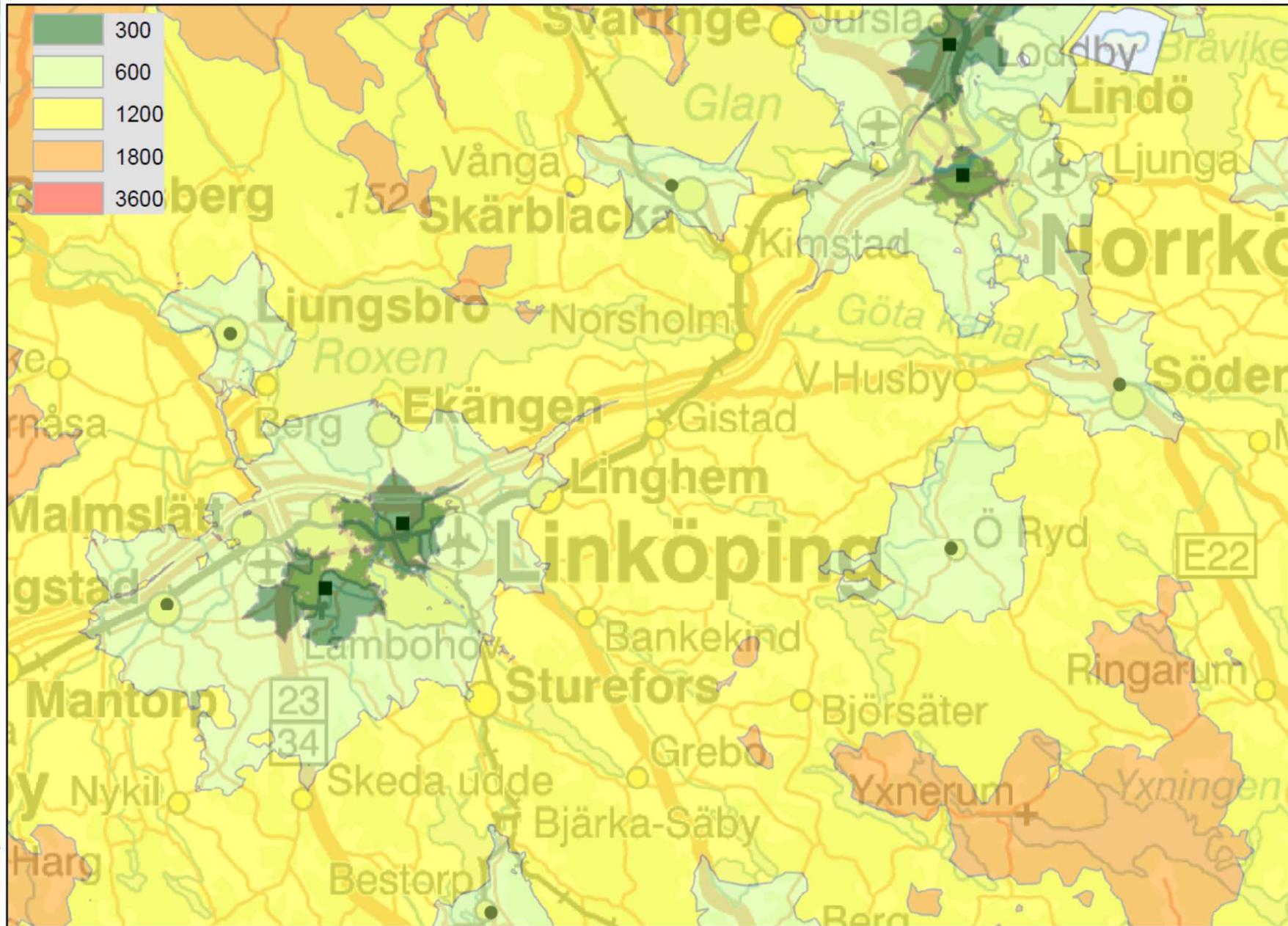
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BLIGS

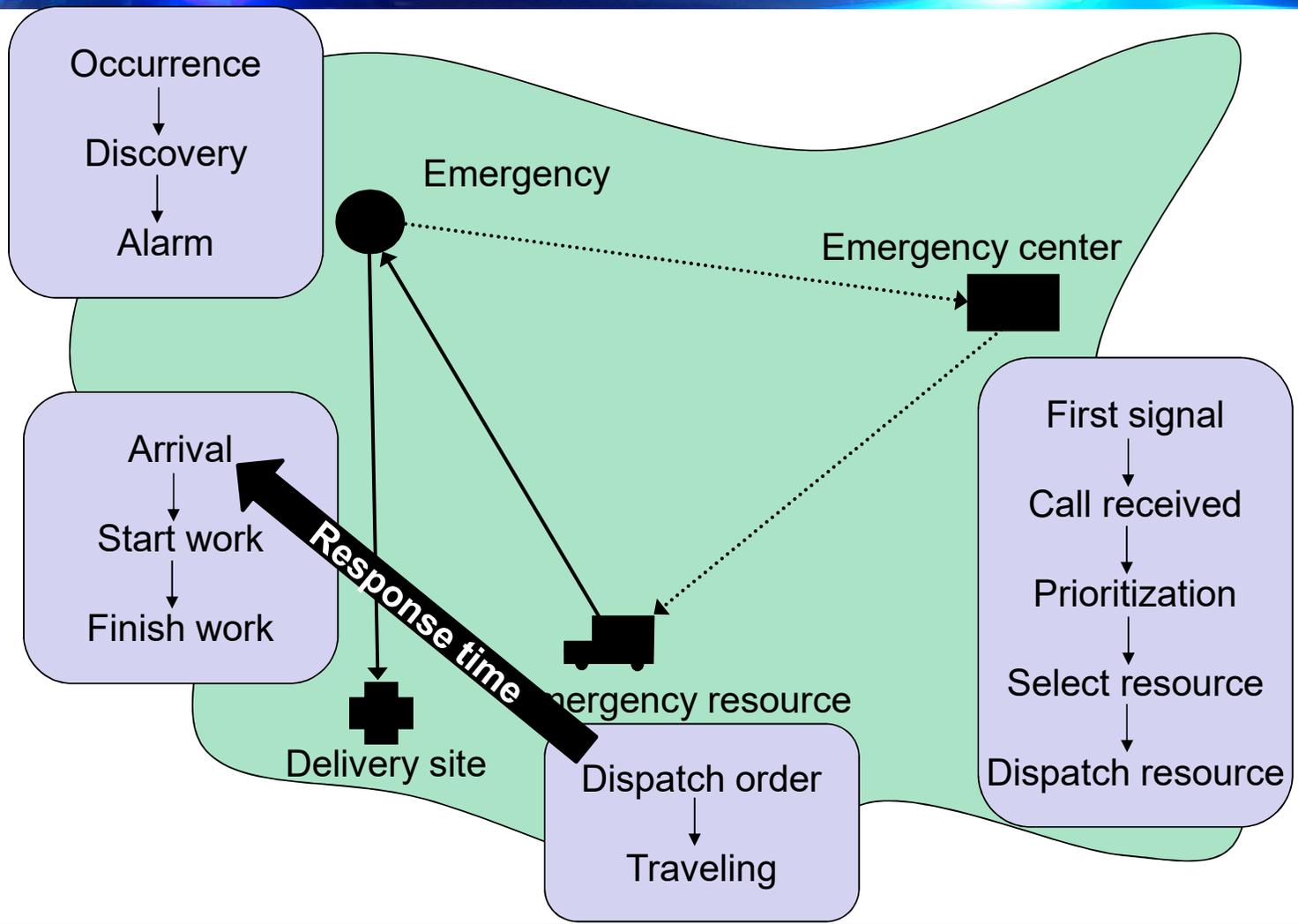
- Blue light in green surroundings
- Challenges and possibilities with emergency response in rural areas
- Today: Supply of fire and rescue services in Sweden

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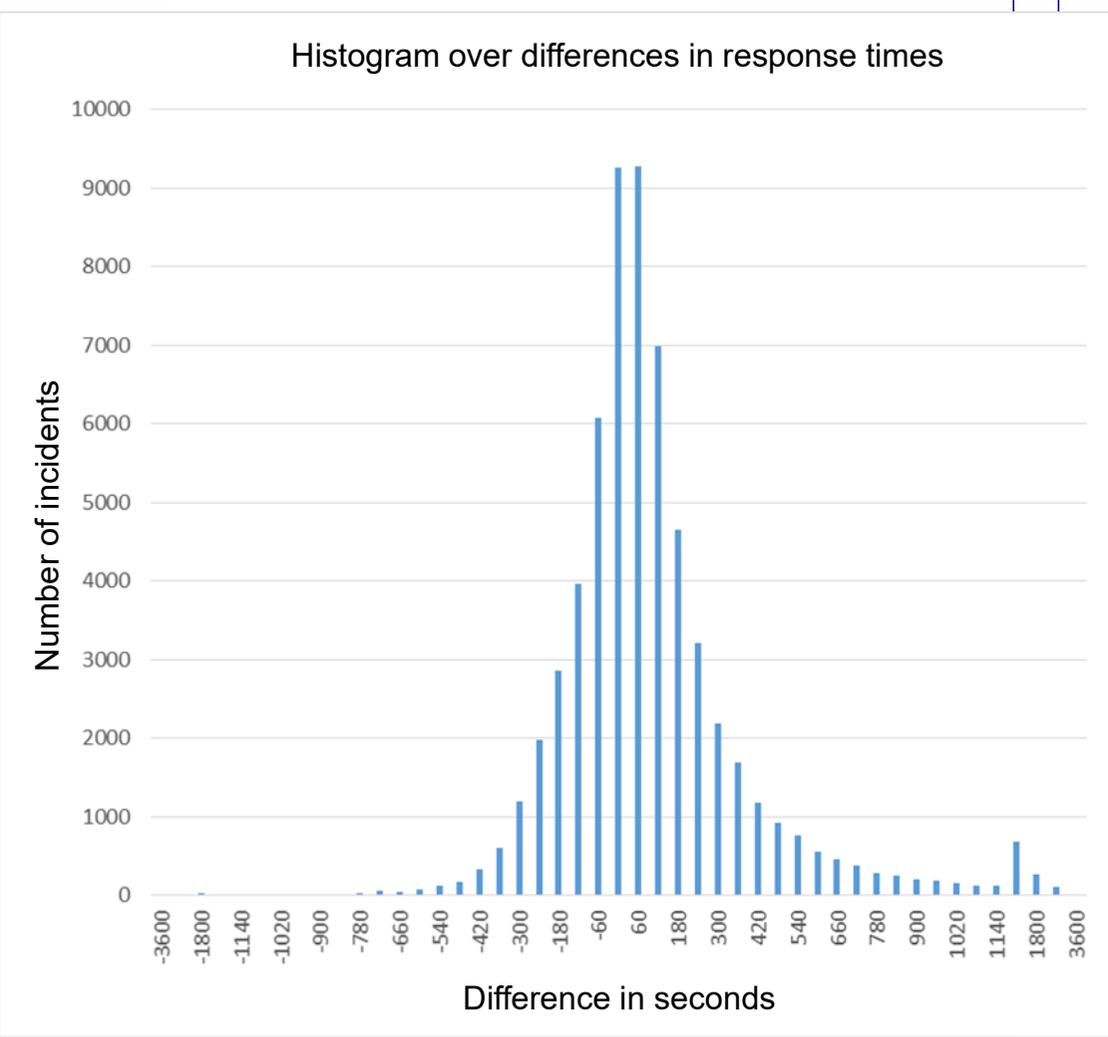
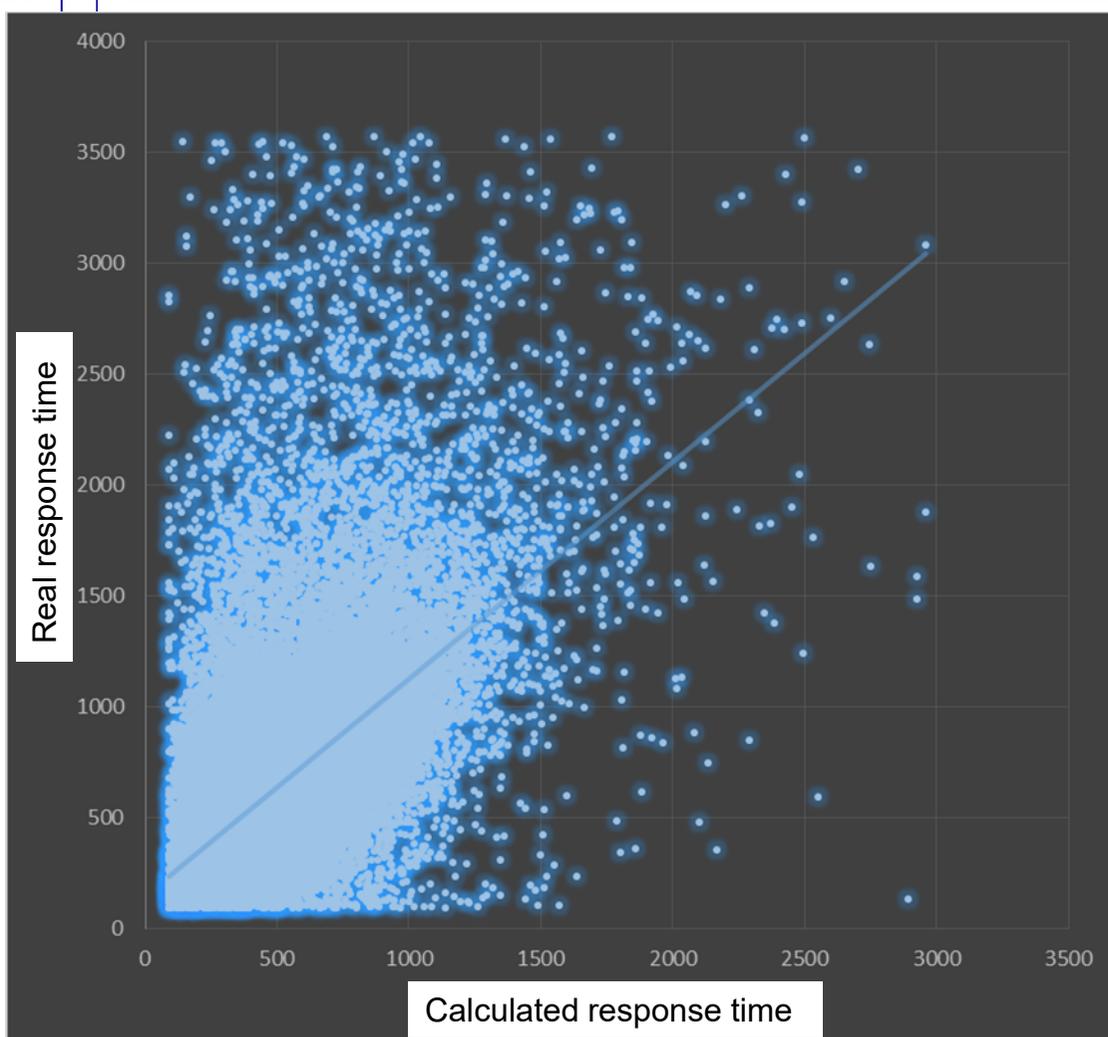
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Research question

- How well do the real response times match the planned (the expected)?

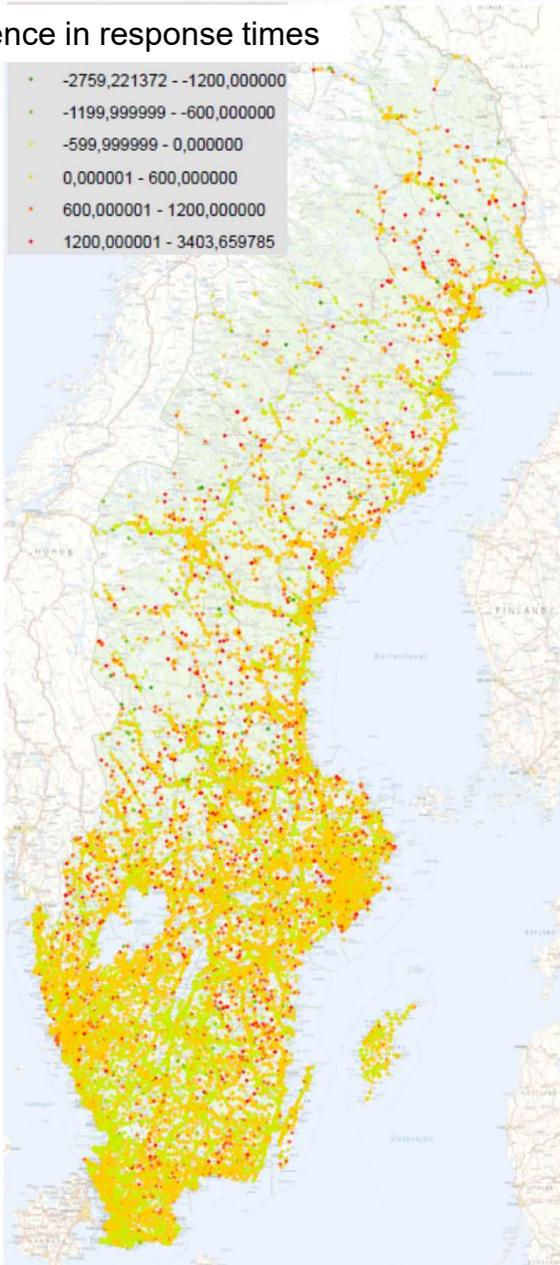


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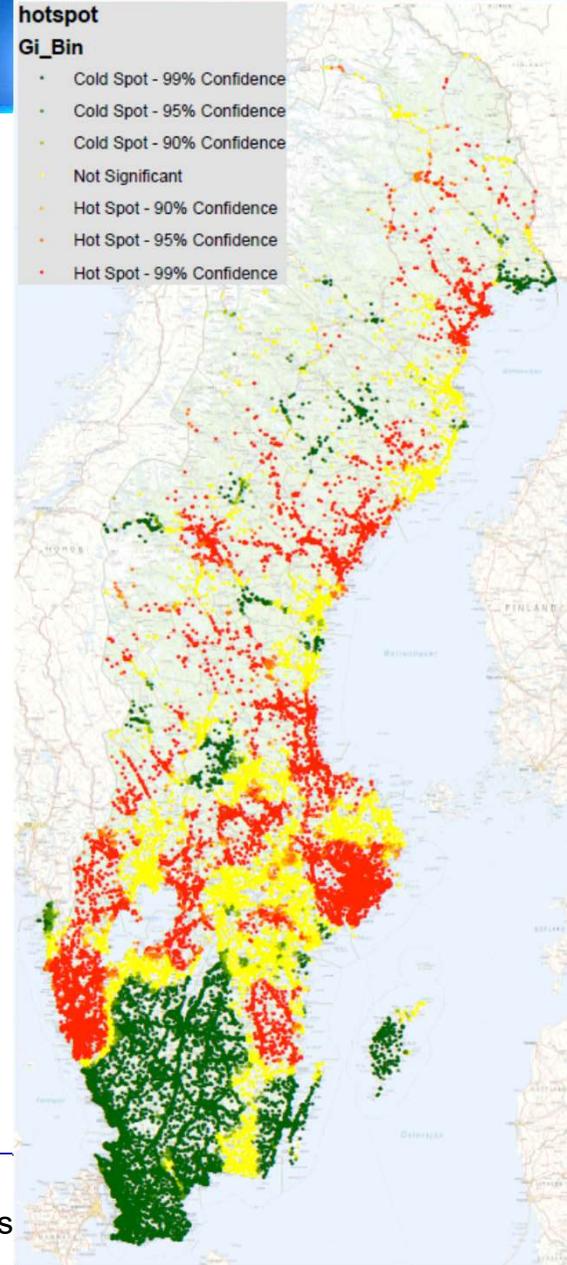
Difference in response times

- 2759,221372 - -1200,000000
- 1199,999999 - -600,000000
- 599,999999 - 0,000000
- 0,000001 - 600,000000
- 600,000001 - 1200,000000
- 1200,000001 - 3403,659785



hotspot Gi_Bin

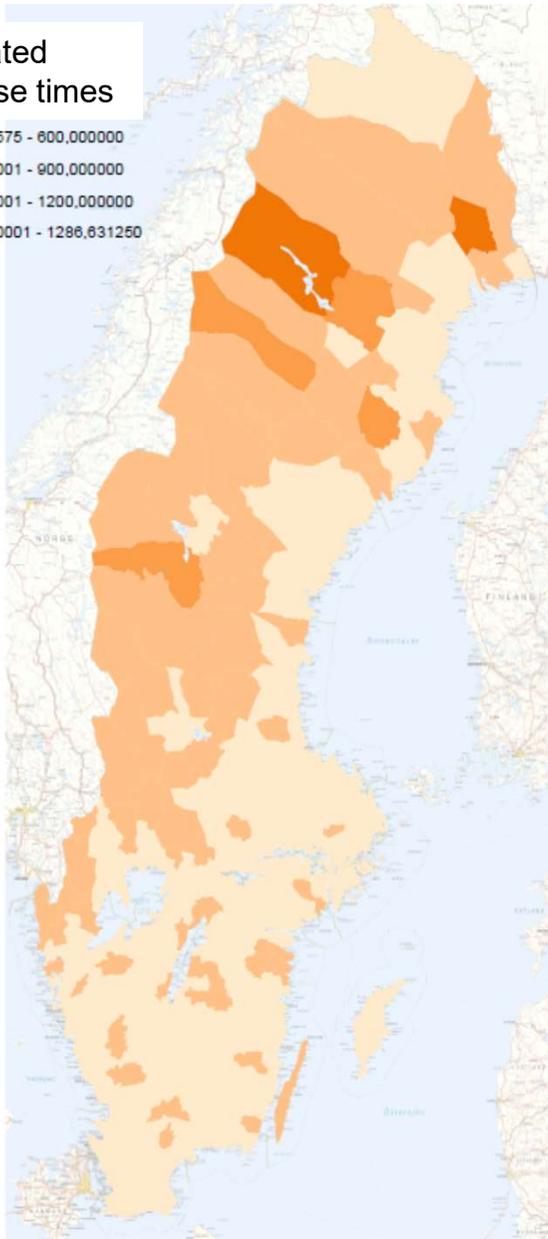
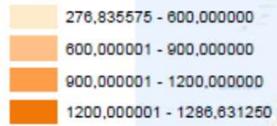
- Cold Spot - 99% Confidence
- Cold Spot - 95% Confidence
- Cold Spot - 90% Confidence
- Not Significant
- Hot Spot - 90% Confidence
- Hot Spot - 95% Confidence
- Hot Spot - 99% Confidence



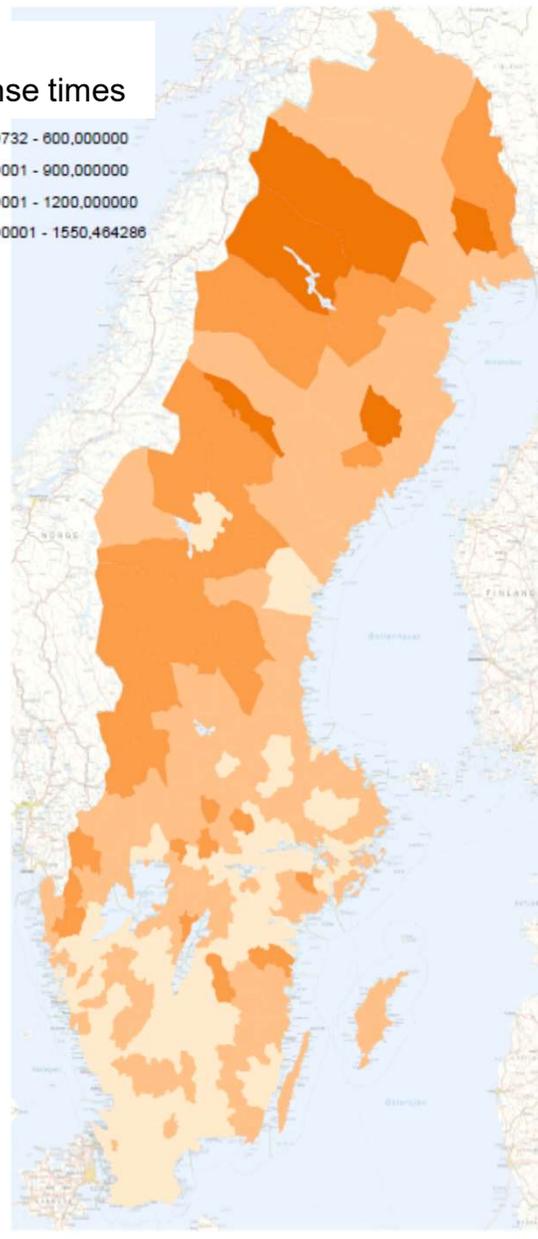
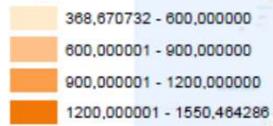
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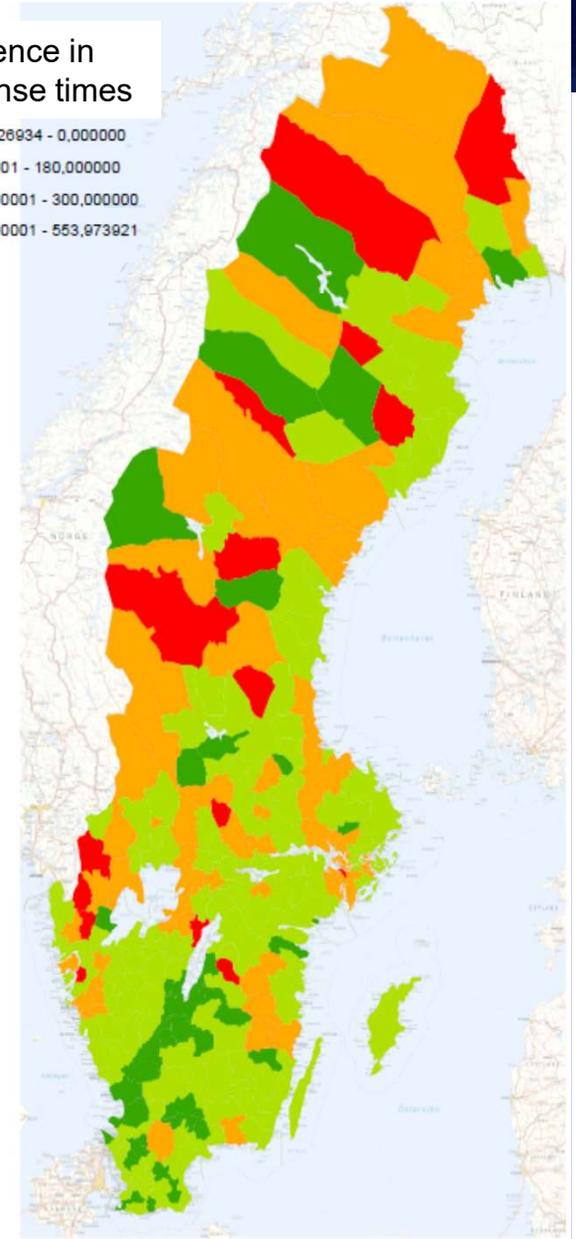
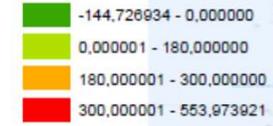
Calculated response times



Real response times



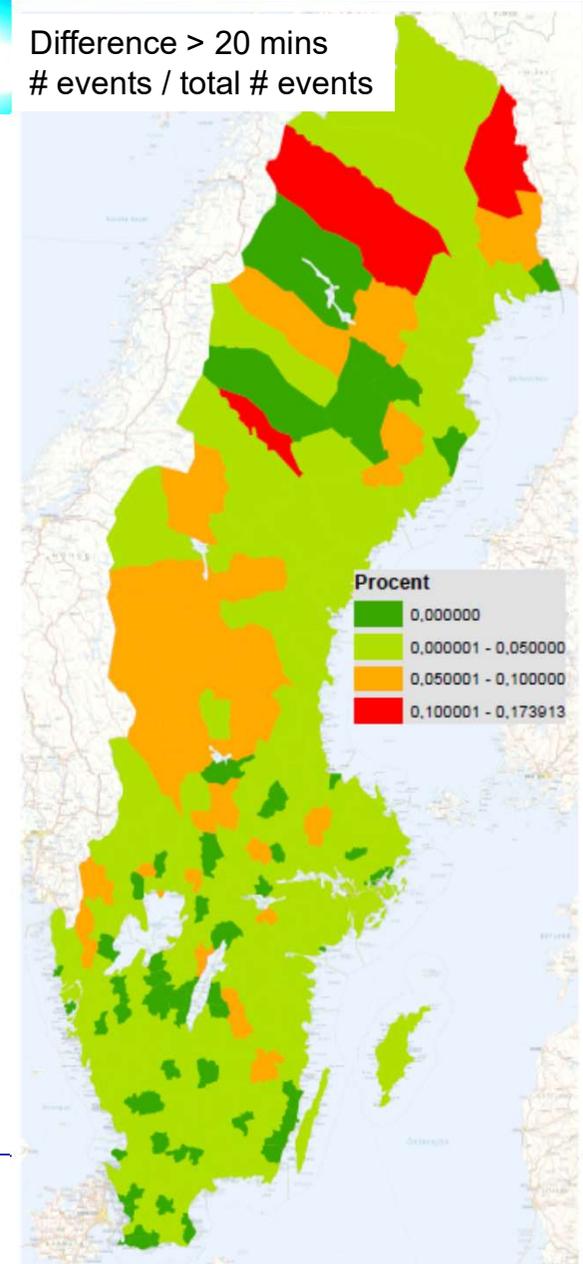
Difference in response times





- Share of incidents with a large difference (> 20 min)

Municipality	Share of incidents with more than 20 mins diff.
Dorotea	17.4%
Jokkmokk	17.0%
Pajala	12.8%
Storfors	10.0%
Krokom	9.9%
Härjedalen	8.9%
Arvidsjaur	8.6%
Boxholm	8.3%
...	...





Conclusions

- Real response times are somewhat longer than planned
 - There may be errors in the status reporting
 - Simple travel time model (does not consider acceleration, real speed, traffic, weather, etc.)
 - Simultaneously occurring incidents not considered
 - Little consideration to less urgent incidents
 - Possibly longer call out times than planned
 - Little consideration to no-stationary units (FIP, CIP)
- But, 80% of all incidents are reached within 5 mins of the planned time
- Next step
 - Identify reasons for geographical differences
 - Investigate more years (not only 2018)

Thank you!

- Tobias.Andersson.Granberg@liu.se
- CARER
- <https://liu.se/en/research/center-for-advanced-research-in-emergency-response>
- Blue light in green surroundings
- <https://wpmu-bis.sys.kth.se/bluelightkth/>



Center for Advanced Research in Emergency Response, is a collaboration between Linköping University (LiU) and the Swedish Civil Contingencies Agency which aims to consolidate and strengthen LiU's research in risk, response and rescue area.

CARER activities are primarily directed towards research and training to deal with society's response capacity in case of accidents, which includes everything from everyday accidents to the extraordinary events on local, national and global levels. It also an opportunity to combine and complement the traditional response resources, such as rescue and ambulance services, with other community resources including the individual.